Title: **The First 4-Year Engineering-Focused Degree at the University of the Virgin Islands: Institutionalizing Caribbean Participation in NASA Science**
Institution: **University of The Virgin Islands**
City/State: **Charlotte Amalie, VI**
PI: **David Morris**

Summary: Through the UVI MIRO-Group6 award "The First 4-Year Physics and Astronomy Degree at the University of the Virgin Islands: A New Era in Caribbean Participation in NASA Science," UVI has transformed into one of the most successful and most productive physics-degree awarding HBCUs in the United States. We have built on a foundation of strong interest in physics and engineering from our students, existing NASA-related research infrastructure, faculty expertise, and dedication to workforce pipeline development. The combination of these factors and the tireless commitment of our faculty and staff have led to UVI's remarkable success during the past 5 years, despite the devastation wreaked by the unprecedented landfall of 2 category-5 hurricanes in the midst of our project and the prolonged recovery period which continues to this day. UVI's MIRO-Group6-sponsored Physics Degree with a Concentration in Astronomy is one of the fastest growing majors at UVI, with a 167% projected increase in graduates for the 2020-2021 academic year.

Through this MIRO-6R proposal, we will expand our physics program to add a concentration in engineering. We will leverage new resources added in the past 5 years through our original MIRO award, including new faculty, new collaborations, new NASA-related research labs, new research projects, and dozens of new physics research students. Though we have graduated 3 physics students with a concentration in astronomy in each of the first 2 years of our program (2019, 2020), many more students (~10-15 per year) continue to opt to transfer to US engineering schools through UVI's 3/2 transfer engineering program. Our physics degree with a concentration in engineering will give UVI students a local alternative to the transfer engineering program that is more cost-effective and allows them to graduate 1-3 years sooner than the transfer program. This new concentration in engineering will connect UVI's underrepresented minority students intimately to NASA research and train them to become part of NASA's future workforce. Based on recent enrollment and student survey results, UVI could reasonably expect to graduate 10 physics majors per year, placing it among the top 3 HBCUs in the country in awarding physics degrees and accounting for some ~3% of the country's total physics B.S. degrees awarded to African American students each year.

UVI's physics group will partner with other MSIs, community colleges, R1 research institutions, federal research labs, local USVI industry and governmental partners, and the local K-12 community as well as a cross-disciplinary faculty group from UVI to develop a pipeline of engineering talent from the USVI K-12 system, through UVI's undergraduate program, into partner graduate programs, and into the USVI and NASA workforce. We leverage ongoing research projects, supported by NSF and NASA grants, in aerospace, chemical, and environmental engineering. We also leverage the successful community and K-12 outreach campaign that we have pioneered in the USVI over the past 5 years.

UVI's physics B.S. program is already providing USVI students with an economically advantageous pathway into careers in the physical sciences and engineering sector and this new concentration in engineering will increase the enrollment in that program by aligning UVI coursework and research projects more closely with student career goals. Moreover, collaborations between the UVI's physics program and local technical skills companies are already leading to never-before-seen STEM job- placement opportunities in the USVI. We will grow and institutionalize relationships that lead to employment opportunities for UVI graduates. Our project has strong support from the UVI administration and supports many of the goals of UVI's 2018-2023 strategic plan, “Greatness Through Innovation''.